

ABSTRACT OF THE DISCLOSURE

Disclosed herein is a method for forming a silicon epitaxial layer. The method comprises the steps of cleaning the surface of a silicon substrate having dopant of predetermined concentration doped therein with mixed plasma comprising an etching gas containing fluorine and hydrogen or deuterium, and forming a silicon epitaxial layer on the cleaned surface of the silicon substrate. The doped concentration of the silicon substrate is preferably 10^{18} to 10^{21} atoms/cm³. According to the present invention, a new preliminary cleaning step is adopted, whereby a silicon epitaxial layer of good quality is formed on a highly doped silicon substrate at a low temperature of 700 °C or less.